

CLAIMS

1. A method for increasing the recovery yield of a recombinant protein in plant cells without significantly altering the natural physiology of said plant cells, comprising neutralizing the activity or the action of at least one plant protease involved in the degradation of said recombinant protein with an inhibitor released from said plant cell at the time said plant cells are disrupted.
2. The method of claim 1, wherein said plant cells are from a plant or from an *in vitro* culture.
3. The method of claim 1 wherein said neutralizing is partial or total.
4. The method of claim 1 wherein said neutralizing occurs when processing said plant cells for extracting said recombinant protein.
5. The method of claim 1, wherein said plant cells are disrupted when performing a process for extracting said recombinant protein.
6. The method of claim 1, wherein said protease is selected from the group consisting of a cysteine protease, an aspartate protease, a metallo protease, a serine protease, a threonine protease, and a multispecific protease.
7. The method of claim 1, wherein said inhibitor is recombinantly produced in said plant cells transformed with an expression cassette comprising a promoter operably linked thereto.
8. The method of claim 1, wherein said inhibitor is linked to a leader peptide, a signal peptide or an anchorage peptide or a protein to lead or anchor said inhibitor to a cell part or extracellular compartment in a manner to protect said

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recombinant protein from the activity of a plant protease during the extraction process.

9. The method of claim 7, wherein said inhibitor does not interfere with the activity of said protease to preserve the physiology or the growth of said plant cells or plant containing said plant cells.
10. The method of claim 7, wherein said cell part is an organelle selected from the group consisting of a mitochondria, a chloroplast, a storage vacuole, the endoplasmic reticulum, and the cytosol.
11. The method of claim 7, wherein said inhibitor is selected from the group consisting of an antibody or a fragment thereof, a sense-mRNA or anti-sense mRNA, an inhibitor of transcription or a regulator thereof, an inhibitor of translation or a regulator thereof, an inhibitor of leading or signal peptide, an inhibitor of metabolic acquisition of activity of a protease, a protease-specific protease, and an affinity peptide protease leading to segregation to said protease into an organelle or a cell compartment.
12. The method of claim 8, wherein said genetically altered plant is an alfalfa or a potatoe.
13. The method of claim 1, wherein said protease is chymostatin-sensitive serine protease.
14. The method of claim 1, wherein said protease is a cystatin-sensitive cysteine protease.
15. The method of claim 1, wherein said inhibitor is a protease inhibitor.

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16. The method of claim 1, wherein said plant cells are genetically altered
17. The method of claim 1, wherein said neutralizing is performed by an inhibitor encoded by a gene under control of a constitutive or an inducible promoter or a tissue or development specific promoter.
18. The method of claim 3 or claim 5, wherein said recombinant protein or inhibitor are produced in nucleus or plastids of said plant cells.
19. A method for increasing the recovery yield of a recombinant protein in a plant comprising the steps of:
- a) allowing production of a recombinant protein in plant cells genetically altered for modulating at least one genetic or metabolic reaction to partially or totally neutralize action or activity of at least one protease at the time of disrupting of said plant cells; and
 - b) recovering said recombinant protein after disrupting of said plant cells.
20. The method of claim 19, wherein said plant cells are from a plant or from *in vitro* culture.
21. The method of claim 19, wherein said action or activity of said protease is neutralized by inhibiting its transcription or translation into an active protease, or by an inhibitor produced by said plant cells, or linking said recombinant protein with a peptide or protein in manner to protect said recombinant protein from the action or activity of said protease.
22. A plant cell or a plant genetically altered to modulate at least one genetic or metabolic reaction to partially or totally neutralize the action or activity of at

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least one protease for improving the recovery of a recombinant protein from said plant cell or plant at the time said plant cell or cells of said plant are disrupted.

23. The plant cell or plant of claim 22, wherein said modulation inhibits the transcription or translation of a gene encoding for a protease, or neutralizes a protease with a protease inhibitor produced in said plant or plant cell.

24. The plant cell or plant of claim 22, wherein said recombinant protein or protease inhibitor is linked to a leader peptide, a signal peptide or protein in manner to improve protection of said recombinant protein from at least one protease.

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